

Collaborative Ultrasonic tagging experiments in 2006

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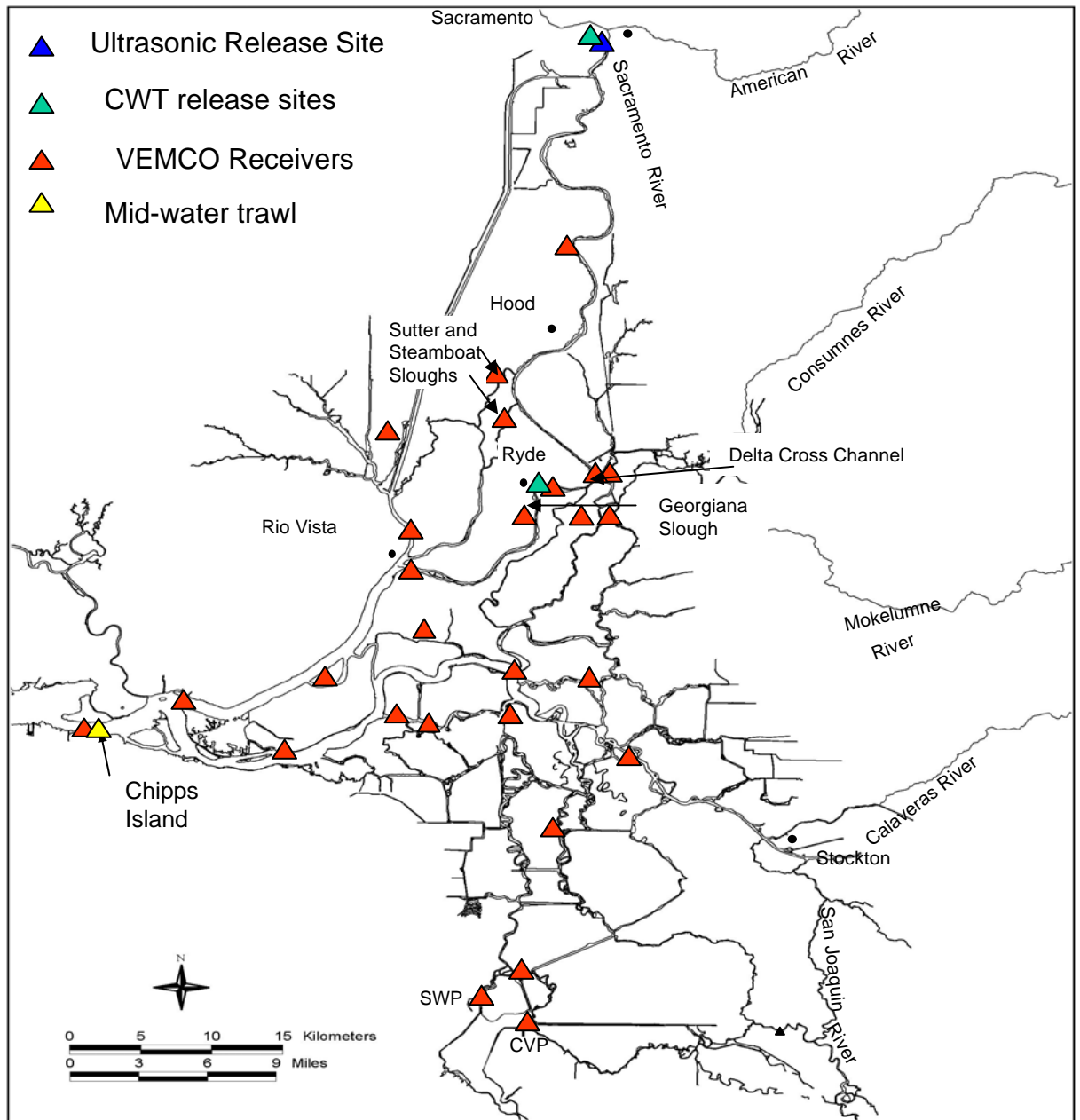
- CWT/Vemco ultrasonic study in the Delta – Brandes and others
- Vemco ultrasonic study in the Sacramento basin - Klimley, MacFarlane and Ammann
- HTI Ultrasonic study in the Delta at Clarksburg – Burau and Vogel

Ultrasonic tagging experiment to complement CWT DA 8 studies in 2006 -2007

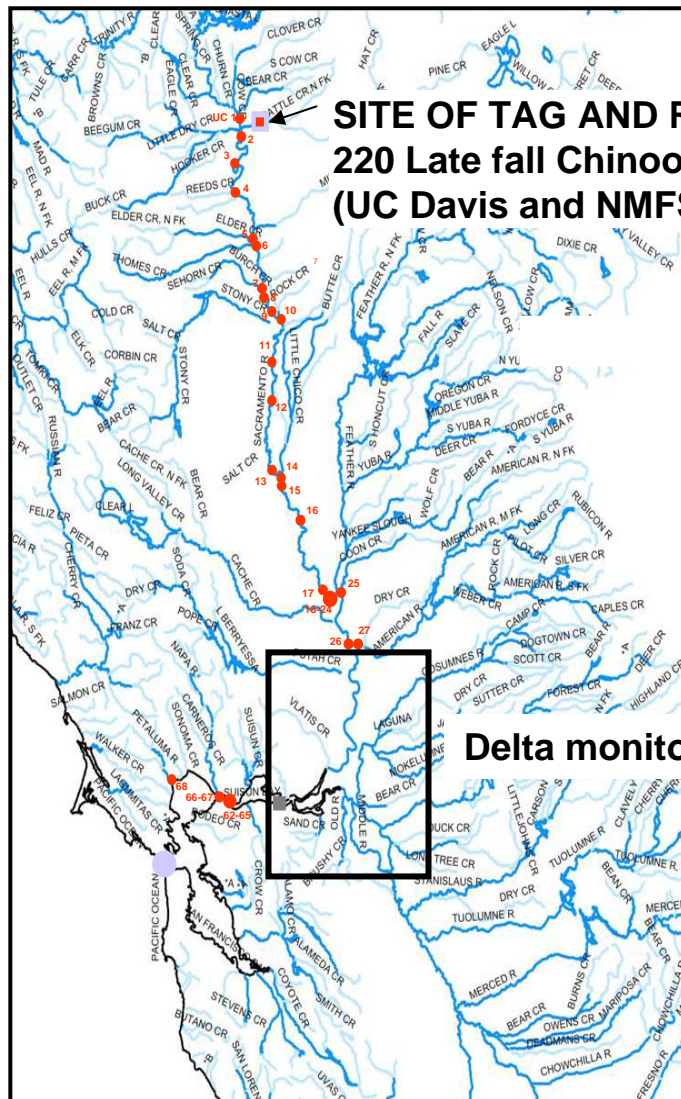
- CWT Release site changed from Georgiana Slough to Sacramento to estimate survival through the Delta
- Ultrasonic tagged fish will be released concurrently with CWT group at Sacramento

Goals of the project

- Determine proportion of ultrasonically tagged fish in various channels
 - Determine “average condition”
- Estimate survival through the Delta (and compare between methods)



Detailed map of the Sacramento-San Joaquin Delta showing proposed release sites and locations of ultrasonic receivers and the Chipps Island trawl. CWT release site for Benicia not shown.



SITE OF TAG AND RELEASE

**220 Late fall Chinook; 220 Steelhead Trout
(UC Davis and NMFS, Santa Cruz)**

Delta monitors

Receivers associated with the larger CALFED salmonid
VEMCO ultrasonic tagging project
Klimley (UCD), MacFarlane, Ammann (NMFS)

2006 -2007 Study Conditions

- December 2006
 - DCC gates open
 - Lower flows
- January 2007
 - DCC gates closed
 - Higher river flows

Sacramento releases

- Ultrasonic tags (72 per release)
 - V7-1L tags
 - 1.4 grams
 - 17.5 mm length
 - 44 day battery life
 - 140 mm/ 4.8% of body weight
 - battery turned off after tagging for 5 days
 - Surgically implanted
- CWT tags (70,000 per release)
 - decimal full tags
 - adipose clip with tag inserted into snout
 - 1 mm in length

Sacramento releases

CWT and Ultrasonic tags

- Truck in 4 discrete groups
- Hold in net pens until release
- Release over time to get “average condition”

Day/ebb (17,500 CWT, 18 Sonic)

Day/flood (17,500 CWT, 18 Sonic)

Night/ebb (17,500 CWT, 18 Sonic)

Night/flood (17,500 CWT, 18 Sonic)

Estimate and compare survival

- Between Sacramento and Ryde, and Sacramento to Chipps Island/Benicia
 - CWT (from Chipps Island and ocean recoveries as they become available)
 - Ultrasonic tags (detect fish released at Sacramento passing Ryde and Benicia - model survival probabilities (Russ Perry, CALFED fellow))

Estimate proportion moving into various channels

Ultrasonic tags

- Identify direction of movement at major junctions (S &S, GS, DCC)
- under different conditions
 - with DCC gates open/closed
- for individuals released on:
 - Day/Night
 - Flood/Ebb

Model distribution probabilities (Russ Perry, CALFED fellow)

- We will also be collaborating with Jon Burau (USGS) in conducting his HTI ultrasonic study on how salmon behave at the Clarksburg bend.